



# Cisco HyperFlex HXAF220c M5 Node (All Flash / All NVMe)

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## OVERVIEW

Cisco HyperFlex™ Systems unlock the full potential of hyperconvergence. The systems are based on an end-to-end software-defined infrastructure, combining software-defined computing in the form of Cisco Unified Computing System (Cisco UCS) servers; software-defined storage with the powerful Cisco HX Data Platform and software-defined networking with the Cisco UCS fabric that will integrate smoothly with Cisco Application Centric Infrastructure (Cisco ACI™). Together with a single point of connectivity and hardware management, these technologies deliver a preintegrated and adaptable cluster that is ready to provide a unified pool of resources to power applications as your business needs dictate.

The Cisco HyperFlex HXAF220c M5 Node is shown in [Figure 1](#).

The HXAF220c M5 servers extend the capabilities of Cisco's HyperFlex portfolio in a 1U form factor with the addition of the Intel® Xeon® Processor Scalable Family, 24 DIMM slots with configuration options ranging from 128GB up to 3TB of DRAM, and an all flash footprint of cache and capacity drives for highly available, high performance storage.

Figure 1 Cisco HyperFlex HXAF220c M5 Node

Front View Front View with Bezel attached



Front View Front View with Bezel Removed



Rear View

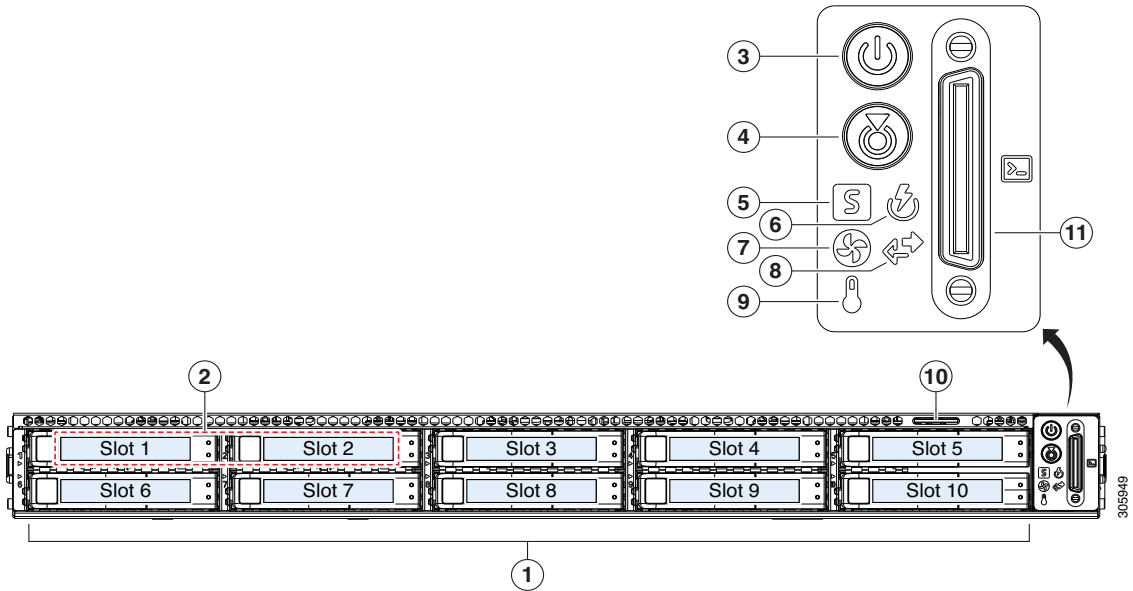


# DETAILED VIEWS

## Chassis Front View

Figure 2 shows the front view of the Cisco HyperFlex HXAF220c M5 Node.

Figure 2 Chassis Front View



1	<p>■ Drive bays 1 to 10 support SAS/SATA solid state drives (SSDs) for HXAF220C-M5SX; Slot 01 (For HyperFlex System/Log drive)</p> <ul style="list-style-type: none"> <li>• 1 x SATA SSD</li> </ul> <p>Slot 02 (For Cache drive)</p> <ul style="list-style-type: none"> <li>• 1 x NVMe SSD OR</li> <li>• 1 x SAS SSD OR</li> <li>• 1 x SED SAS SSD</li> </ul> <p>Slot 03 through 10 (For Capacity drives)</p> <ul style="list-style-type: none"> <li>• Up to 8 x SATA SSD OR</li> <li>• Up to 8 x SED SATA SSD OR</li> <li>• up to 8 x SED SAS SSD</li> </ul> <p>■ Drive bays 1 - 10 support NVMe solid state drives for HXAF220C-M5SN;</p>	7	Fan status LED
2	HXAF220C-M5SX version: Drive bays 1 and 2 support SFF NVMe PCIe SSDs.	8	Network link activity LED
3	Power button/Power status LED	9	Temperature status LED
4	Unit identification button/LED	10	Pull-out asset tag

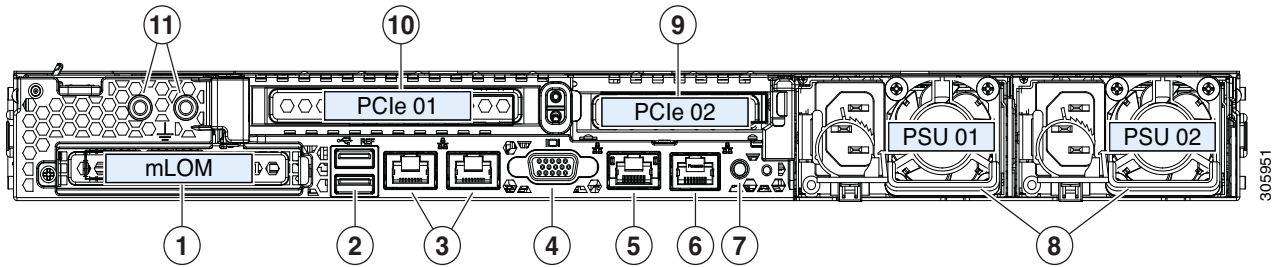
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5	System status LED	11	KVM connector (used with KVM cable that provides two USB 2.0, one VGA, and one serial connector)
6	Power supply status LED	—	—

## Chassis Rear View

Figure 3 shows the external features of the rear panel.

Figure 3 Chassis Rear View



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1	Modular LAN-on-motherboard (mLOM) card bay (x16)	7	Rear unit identification button/LED
2	USB 3.0 ports (two)	8	Power supplies (two, redundant as 1+1)
3	Dual 1/10 GE ports (LAN1 and LAN2). LAN1 is left connector and LAN2 is right connector	9	PCIe riser 2 (slot 2) (half-height, x16); NOTE: Use of PCIe riser 2 requires a dual CPU configuration.
4	VGA video port (DB-15)	10	PCIe riser 1 (slot 1) (full-height, x16)
5	1GE dedicated management port	11	Threaded holes for dual-hole grounding lug
6	Serial port (RJ-45 connector)	—	—

## BASE NODE STANDARD CAPABILITIES and FEATURES

*Table 1* lists the capabilities and features of the base HXAF220c M5 Node. Details about how to configure the system for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in [CONFIGURING the HyperFlex HXAF220c M5 Node, page 11](#).

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	One rack unit (1RU) chassis
CPU	One or two Intel® Xeon® processor scalable family CPUs
Chipset	Intel® C620 series chipset
Memory	24 slots for Registered ECC DDR4 DIMMs (RDIMMs), Load-Reduced DIMMS (LRDIMMs), or Through Silicon Via (TSV) DIMM modules
Multi-bit Error Protection	This server supports multi-bit error protection.
Video	The Cisco Integrated Management Controller (CIMC) provides video using the ASPEED Pilot 4 video/graphics controller: <ul style="list-style-type: none"> <li>■ Integrated 2D graphics core with hardware acceleration</li> <li>■ DDR4 memory interface supports up to 16 MB directly accessible from host and entire DDR memory indirectly accessible from host processor.</li> <li>■ Supports all display resolutions up to 1920 x 1200 x 32bpp resolution at 60Hz</li> <li>■ High-speed integrated 24-bit RAMDAC</li> <li>■ Single lane PCI-Express host interface</li> <li>■ eSPI processor to BMC support</li> </ul>
Power subsystem	One or two of the following hot-swappable power supplies: <ul style="list-style-type: none"> <li>■ 770 W (AC)</li> <li>■ 1050 W (AC)</li> <li>■ 1050 W (DC)</li> <li>■ 1600 W</li> </ul> One power supply is mandatory; one more can be added for 1 + 1 redundancy.
WoL	The Intel x550 10Gbase-T Ethernet LAN ports support the wake-on-LAN (WoL) standard.
Front Panel	A front panel controller provides status indications and control buttons
ACPI	This server supports the advanced configuration and power interface (ACPI) 4.0 standard.
Fans	<ul style="list-style-type: none"> <li>■ Seven hot-swappable fans for front-to-rear cooling</li> </ul>

Table 1 Capabilities and Features *(continued)*


Capability/Feature	Description
Expansion slots	<ul style="list-style-type: none"> <li>■ Riser 1 (controlled by CPU 1):                             <ul style="list-style-type: none"> <li>• One full-height profile, 3/4-length slot with x24 connector and x16 lane.</li> </ul> </li> <li>■ Riser 2 (controlled by CPU 2):                             <ul style="list-style-type: none"> <li>• One half-height profile, half-length slot with x24 connector and x16 lane</li> <li>NOTE: Use of PCIe riser 2 requires a dual CPU configuration.</li> </ul> </li> <li>■ Dedicated SAS HBA slot (see <a href="#">Figure 6 on page 42</a>)                             <ul style="list-style-type: none"> <li>• An internal slot is reserved for use by the Cisco 12G SAS HBA.</li> </ul> </li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>■ Rear panel                             <ul style="list-style-type: none"> <li>• One 1Gbase RJ-45 management port (Marvell 88E6176)</li> <li>• Two 10Gbase-T LOM ports (Intel X550 controller embedded on the motherboard)</li> <li>• One RS-232 serial port (RJ45 connector)</li> <li>• One DB15 VGA connector</li> <li>• Two USB 3.0 port connectors</li> <li>• One flexible modular LAN on motherboard (mLOM) slot that can accommodate various interface cards</li> </ul> </li> <li>■ Front panel                             <ul style="list-style-type: none"> <li>• One KVM console connector (supplies two USB 2.0 connectors, one VGA DB15 video connector, and one serial port (RS232) RJ45 connector)</li> </ul> </li> </ul>



Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Internal storage devices	<p>Drives are installed into front-panel drive bays. The server is orderable in two different versions:</p> <ul style="list-style-type: none"> <li>■ HXAF220C-M5SX: <ul style="list-style-type: none"> <li>• Up to 10 Drives are installed into front-panel drive bays as below; <ul style="list-style-type: none"> <li>&gt; Up to Eight SATA SSD OR Up to Eight SED SATA/SAS SSD (for capacity)</li> <li>&gt; One NVMe SSD OR One SAS SSD OR One SED SAS SSD (for caching)</li> <li>&gt; One SATA SSD (System drive for HyperFlex Operations)</li> </ul> </li> <li>• NVMe Caching drives must be placed in front drive bays 1 and 2 only. They are connected from Riser 2.</li> </ul> </li> <li>■ HXAF220C-M5SN: <ul style="list-style-type: none"> <li>• Up to 10 Drives are installed into front-panel drive bays as below <ul style="list-style-type: none"> <li>&gt; Up to Eight NVMe SSD (for capacity)</li> <li>&gt; One NVMe SSD (for caching)</li> <li>&gt; One NVMe SSD (System drive for HXDP Operations)</li> </ul> </li> <li>• The drives in slots 1 and 2 are connected from Riser 2 and the drives in slots 3 through 10 are connected from the PCIe switch card plugged into the internal HBA slot.</li> </ul> </li> <li>■ A mini-storage module connector on the motherboard for M.2 module for one M.2 SATA SSDs for following usage: <ul style="list-style-type: none"> <li>• ESXi hypervisor boot and HyperFlex storage controller VM</li> </ul> </li> <li>■ One socket for one micro-SD card on PCIe Riser 1 for following usage: <ul style="list-style-type: none"> <li>• The micro-SD card serves as a dedicated local resource for utilities such as host upgrade utility (HUU). Images can be pulled from a file share (NFS/CIFS) and uploaded to the cards for future use.</li> </ul> </li> </ul>
Integrated management processor	<p>Baseboard Management Controller (BMC) running Cisco Integrated Management Controller (CIMC) firmware.</p> <p>Depending on your CIMC settings, the CIMC can be accessed through the 1GE dedicated management port, the 1GE/10GE LOM ports, or a Cisco virtual interface card (VIC).</p> <p>CIMC manages certain components within the server, such as the Cisco 12G SAS HBA.</p>
Storage controller	<p>Cisco 12G SAS HBA (JBOD/Pass-through Mode)</p> <ul style="list-style-type: none"> <li>■ Supports up to 10 SAS/SATA internal drives</li> <li>■ Plugs into the dedicated RAID controller slot</li> </ul>
Modular LAN on Motherboard (mLOM) slot	<p>The dedicated mLOM slot on the motherboard can flexibly accommodate the following cards:</p> <ul style="list-style-type: none"> <li>■ Cisco 1457 Quad Port Virtual Interface Card (10GE/25GE)</li> <li>■ Quad Port Intel i350 1GbE RJ45 Network Interface Card (NIC)</li> </ul>

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
	<p>NOTE:</p> <ul style="list-style-type: none"> <li>■ 1387 VIC natively supports 6300 series FIs.</li> <li>■ To support 6200 series FIs with 1387, 10G QSAs compatible with 1387 are available for purchase.</li> <li>■ Breakout cables are not supported with 1387</li> <li>■ Use of 10GE is not allowed when used with 6300 series FI.</li> </ul>
(optional) Additional NICs	<p>PCIe slot 1 and PCIe slot 2 on the motherboard can flexibly accommodate the following cards:</p> <ul style="list-style-type: none"> <li>■ Intel X550-T2 dual port 10Gbase-T</li> <li>■ Intel XXV710-DA2 dual port 25GE NIC</li> <li>■ Intel i350 quad port 1Gbase-T</li> <li>■ Intel X710-DA2 dual port 10GE NIC</li> </ul>
UCSM	<p>Unified Computing System Manager (UCSM) runs in the Fabric Interconnect and automatically discovers and provisions some of the server components.</p>

## CONFIGURING the HyperFlex HXAF220c M5 Node

For the most part, this system comes with a fixed configuration. Use these steps to see or change the configuration of the Cisco HXAF220c M5 Node:

- *STEP 1 VERIFY SERVER SKU, page 12*
- *STEP 2 SELECT CPU(s), page 13*
- *STEP 3 SELECT MEMORY, page 16*
- *STEP 4 SELECT RAID CONTROLLER, page 19*
- *STEP 5 SELECT DRIVES, page 20*
- *STEP 6 SELECT PCIe OPTION CARD(s), page 23*
- *STEP 7 ORDER POWER SUPPLY, page 25*
- *STEP 8 SELECT POWER CORD(s), page 26*
- *STEP 9 SELECT ACCESSORIES, page 29*
- *STEP 10 ORDER TOOL-LESS RAIL KIT AND OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM, page 30*
- *STEP 11 SELECT HYPERVISOR / HOST OPERATING SYSTEM, page 31*
- *STEP 12 SELECT HX DATA PLATFORM SOFTWARE, page 32*
- *STEP 13 SELECT INSTALLATION SERVICE, page 33*
- *STEP 14 SELECT SERVICE and SUPPORT LEVEL, page 34*
- *OPTIONAL STEP - ORDER RACK(s), page 39*
- *OPTIONAL STEP - ORDER PDU, page 40*

## STEP 1 VERIFY SERVER SKU

Verify the product ID (PID) of the server as shown in [Table 2](#).

Table 2 PID of the HXAF220c M5 Node

Product ID (PID)	Description
HXAF-M5S-HXDP	This major line bundle (MLB) consists of the Server Nodes (HXAF220c-M5SX and HXAF240C-M5SX) with HXDP software spare PIDs
HXAF220c-M5S <sup>1</sup>	HXAF220c M5 Node, with one or two CPUs, memory, eight SSDs for data storage, one SSD for system/logs, one SSD for caching, two power supplies, one M.2 SATA SSD, one micro-SD card, one VIC 1387 mLOM card, no PCIe cards, and no rail kit
HXAF2X0C-M5S	This major line bundle (MLB) consists of the Server Nodes (HXAF220C-M5SX and HXAF240C-M5SX), Fabric Interconnects (HX-FI-6248UP, HX-FI-6296UP, HX-FI-6332, HX-FI-6332-16UP) and HXDP software spare PIDs.

Notes:

1. This product may not be purchased outside of the approved bundles (must be ordered under the MLB).

The HXAF220c M5SX Node:

- Requires configuration of one or two power supplies, one or two CPUs, recommended memory sizes, 1 SSD for Caching, 1 SSD for system logs, up to 8 capacity SSDs, 1 VIC mLOM card, 1 M.2 SATA SSD and 1 micro-SD card.
- Provides option to choose 10G QSAs to connect with HX-FI-6248UP and HX-FI-6296UP
- Provides option to choose rail kits.

The HXAF220c M5SN Node:

- Requires configuration of one or two power supplies, one or CPUs, recommended memory sizes, 1 NVMe SSD for Caching, 1 NVMe SSD for system logs, up to 8 data NVMe SSDs, 1 VIC mLOM card, 1 M.2 SATA SSD and 1 micro-SD card.
- Provides option to choose 10G QSAs to connect with HX-FI-6248UP and HX-FI-6296UP
- Provides option to choose rail kits.



**NOTE:** Use the steps on the following pages to configure the node with the components that you want to include.

## STEP 2 SELECT CPU(s)

The standard CPU features are:

- Intel® Xeon® processor scalable family CPUs
- From 8 cores up to 28 cores per CPU
- Intel C620 series chipset
- Cache size of up to 38.5 MB

Select CPUs

The available CPUs are listed in [Table 3](#).

Table 3 Available Intel CPUs (Sheet 1 of 2)

Product ID (PID)	Intel Number <sup>1</sup>	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	UPI <sup>2</sup> Links (GT/s)	Highest DDR4 DIMM Clock Support (MHz) <sup>3</sup>
Intel® Xeon® Processor Scalable Family CPUs							
HX-CPU-8180M	8180M	2.5	205	38.50	28	3 x 10.4	2666
HX-CPU-6142M	6142M	2.6	150	22.00	16	3 x 10.4	2666
HX-CPU-6134M	6134M	3.2	130	24.75	8	3 x 10.4	2666
HX-CPU-8176M	8176M	2.1	165	38.50	28	3 x 10.4	2666
HX-CPU-8170M	8170M	2.1	165	35.75	26	3 x 10.4	2666
HX-CPU-8160M	8160M	2.1	150	33.00	24	3 x 10.4	2666
HX-CPU-6140M	6140M	2.3	140	24.75	18	3 x 10.4	2666
HX-CPU-8180	8180	2.5	205	38.50	28	3 x 10.4	2666
HX-CPU-8176	8176	2.1	165	38.50	28	3 x 10.4	2666
HX-CPU-8170	8170	2.1	165	35.75	26	3 x 10.4	2666
HX-CPU-8168	8168	2.7	205	33.00	24	3 x 10.4	2666
HX-CPU-8164	8164	2.0	150	35.75	26	3 x 10.4	2666
HX-CPU-8160	8160	2.1	150	33.00	24	3 x 10.4	2666
HX-CPU-8158	8158	3.0	150	24.75	12	3 x 10.4	2666
HX-CPU-8153	8153	2.0	125	22.00	16	3 x 10.4	2666
HX-CPU-6154	6154	3.0	200	24.75	18	3 x 10.4	2666
HX-CPU-6152	6152	2.1	140	30.25	22	3 x 10.4	2666
HX-CPU-6150	6150	2.7	165	24.75	18	3 x 10.4	2666
HX-CPU-6148	6148	2.4	150	27.50	20	3 x 10.4	2666
HX-CPU-6146	6146	3.2	165	24.75	12	3 x 10.4	2666
HX-CPU-6144	6144	3.5	150	24.75	8	3 x 10.4	2666
HX-CPU-6142	6142	2.6	150	22.00	16	3 x 10.4	2666
HX-CPU-6140	6140	2.3	140	24.75	18	3 x 10.4	2666

Table 3 Available Intel CPUs (Sheet 1 of 2)

Product ID (PID)	Intel Number <sup>1</sup>	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	UPI <sup>2</sup> Links (GT/s)	Highest DDR4 DIMM Clock Support (MHz) <sup>3</sup>
HX-CPU-6138	6138	2.0	125	27.50	20	3 x 10.4	2666
HX-CPU-6136	6136	3.0	150	24.75	12	3 x 10.4	2666
HX-CPU-6134	6134	3.2	130	24.75	8	3 X 10.4	2666
HX-CPU-6132	6132	2.6	140	19.25	14	3 x 10.4	2666
HX-CPU-6130	6130	2.1	125	22.00	16	3 x 10.4	2666
HX-CPU-6126	6126	2.6	125	19.25	12	3 x 10.4	2666
HX-CPU-5120	5120	2.2	105	19.25	14	2 x 10.4	2400
HX-CPU-5118	5118	2.3	105	16.50	12	2 x 10.4	2400
HX-CPU-5117	5117	2.0	105	19.25	14	2 x 10.4	2400
HX-CPU-5115	5115	2.4	85	13.75	10	2 x 10.4	2400
HX-CPU-4116	4116	2.1	85	16.50	12	2 x 9.6	2400
HX-CPU-4114	4114	2.2	85	13.75	10	2 x 9.6	2400
HX-CPU-4110	4110	2.1	85	11.00	8	2 x 9.6	2400
HX-CPU-4108	4108	1.8	85	11.00	8	2 x 9.6	2400
HX-CPU-3106	3106	1.7	85	11.00	8	2 x 9.6	2133

Notes:

1. Only CPU PIDs ending in “M” support 1.5 TB/socket of memory, per Intel CPU spec. All other CPU PIDs support 768 GB/socket memory.
2. UPI = Ultra Path Interconnect. 2-socket servers support only 2 UPI performance, even if the CPU supports 3 UPI.
3. If higher or lower speed DIMMs are selected than what is shown in the table for a given CPU, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock.

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## Approved Configurations

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### (1) 1-CPU Configuration:

- Select any one CPU listed in [Table 3 on page 13](#).



#### NOTE:

- The 1-CPU configuration is only supported for CPU SKUs HX-CPU-4114 and above. 1-CPU configuration is not supported for HX-CPU-3106, HX-CPU-4108 or HX-CPU-4110 due to the low core count on those processors.
  - The 1-CPU configuration is not supported when choosing either NVMe Caching drives or All NVMe systems
- 

### (2) 2-CPU Configuration:

- Select two identical CPUs from any one of the rows of [Table 3 on page 13](#).

## Caveats

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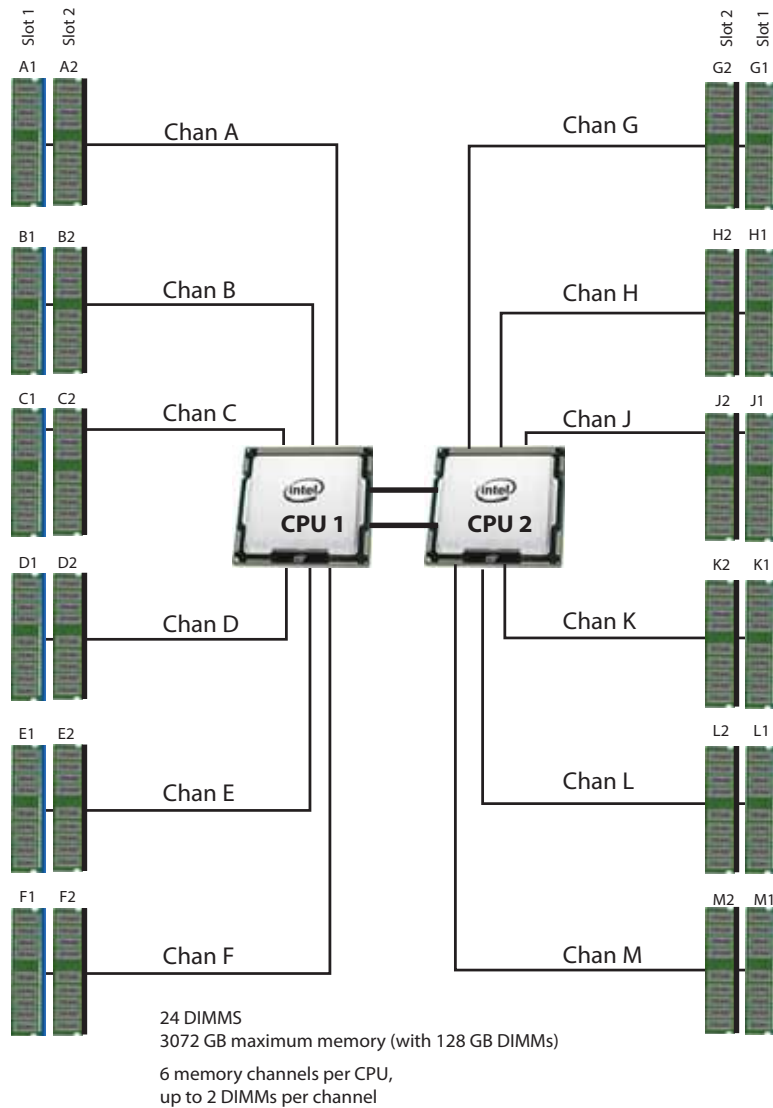
- You can select either one processor or two identical processors.

### STEP 3 SELECT MEMORY

The standard memory features are:

- DIMMs
  - Clock speed: 2666 MHz
  - Ranks per DIMM: 1, 2, 4, or 8
  - Operational voltage: 1.2 V
  - Registered ECC DDR4 DIMMs (RDIMMs), Load-Reduced DIMMS (LRDIMMs), or Through Silicon Via (TSV) DIMM modules
- Memory is organized with six memory channels per CPU, with up to two DIMMs per channel, as shown in [Figure 4](#).

Figure 4 HXAF220c M5 Node Memory Organization





## Select DIMMs



NOTE: The memory mirroring feature is not supported with HyperFlex nodes.

Table 4 Available DDR4 DIMMs

Product ID (PID)	PID Description	Voltage	Ranks/ DIMM
HX-MR-128G8RS-H	128 GB DDR4-2666-MHz TSV-RDIMM/PC4-21300/8R/x4	1.2 V	8
HX-ML-X64G4RS-H	64 GB DDR4-2666-MHz LRDIMM/PC4-21300/4R/x4	1.2 V	4
HX-MR-X32G2RS-H	32 GB DDR4-2666-MHz RDIMM/PC4-21300/2R/x4	1.2 V	2
HX-MR-X16G1RS-H	16 GB DDR4-2666-MHz RDIMM/PC4-21300/1R/x4	1.2 V	1

## Approved Configurations

## (1) 1-CPU configuration

- Select from 1 to 12 DIMMs.

## (2) 2-CPU configuration

- Select 1 to 12 DIMMs per CPU.

## NOTE:

- The selected DIMMs must be all of same type and number of DIMMs must be equal for both CPUs
- Even though 128GB of DRAM is supported, It is recommended to have a minimum of 192GB of DRAM configured for maximum performance
- HyperFlex Data Platform reserves 48GB of DRAM
- Recommended 6 or 12 DIMMs per CPU

- For Single CPU systems The DIMMs will be placed by the factory as shown in the following table.

CPU 1 DIMM Placement in Channels (for identical ranked DIMMs)	
6	(A1, B1, C1); (D1, E1, F1)
8	(A1, A2, B1, B2); (D1, D2, E1, E2)
12	(A1, A2, B1, B2, C1, C2); (D1, D2, E1, E2, F1, F2)

- For Dual CPU systems The DIMMs will be placed by the factory as shown in the following table.

	CPU 1 DIMM Placement in Channels (for identical ranked DIMMs)	CPU 2 DIMM Placement in Channels (for identical ranked DIMMs)
	CPU 1	CPU 2
4	(A1,B1); (D1,E1)	(G1, H1); (K1, L1)
6	(A1, B1, C1); (D1, E1, F1)	(G1, H1, J1); (K1, L1, M1)
8	(A1, A2, B1, B2); (D1, D2, E1, E2)	(G1, G2, H1, H2); (K1, K2, L1, L2)
12	(A1, A2, B1, B2, C1, C2); (D1, D2, E1, E2, F1, F2)	(G1, G2, H1, H2, J1, J2); (K1, K2, L1, L2, M1, M2)



**NOTE:** System performance is optimized when the DIMM type and quantity are equal for both CPUs, and when all channels are filled equally across the CPUs in the server.

## STEP 4 SELECT RAID CONTROLLER

### SAS HBA (internal HDD/SSD/JBOD support)

Choose the following SAS HBA for internal drive connectivity (non-RAID):

- The Cisco 12G SAS HBA, which plugs into a dedicated RAID controller slot.



NOTE: Storage controllers are not needed for All NVMe systems

#### Select Controller Options

Select the following:

- Cisco 12 Gbps Modular SAS HBA (see [Table 5](#))

Table 5 Hardware Controller Options

Product ID (PID)	PID Description
<b>Controllers for Internal Drives</b>	
Note that the following Cisco 12G SAS HBA controller is factory-installed in the dedicated internal slot.	
HX-SAS-M5	Cisco 12G SAS HBA <ul style="list-style-type: none"> <li>■ Supports up to 10 internal SAS HDDs and SAS/SATA SSDs</li> <li>■ Supports JBOD mode only for use with HyperFlex Data Platform software.</li> <li>■ The HyperFlex Data Platform performs its own internal data replication for high availability. Hence, no RAID functionality is used.</li> </ul>

#### Approved Configurations

The Cisco 12 Gbps Modular SAS HBA supports up to 10 internal drives.

## STEP 5 SELECT DRIVES

The standard disk drive features are:

- 2.5-inch small form factor
- Hot-pluggable
- Drives come mounted in sleds

### Select Drives

The available drives are listed in [Table 6](#)



NOTE: SED SSDs (10X endurance) are FIPS 140-2 compliant  
 SED SSDs (3X and 1X endurance) are not FIPS 140-2 compliant

Table 6 Available Sled-Mounted SSDs

Product ID (PID)	PID Description	Drive Type	Capacity
<b>Capacity Drives</b>			
HX-SD960G61X-EV	960GB 2.5 Inch Enterprise Value 6G SATA SSD (1X endurance)	SATA	960 GB
HX-SD38T61X-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance)	SATA	3.8 TB
HX-SD800GBENK9**	800GB 2.5 inch Ent. Perf. 12G SAS SED SSD (10X endurance)	SAS	800 GB
HX-SD960GBE1NK9**	960GB 2.5 inch Ent. Value 6G SATA SED SSD (1X endurance)	SATA	960 GB
HX-SD38TBE1NK9**	3.8TB 2.5 inch Ent. Value 6G SATA SED SSD (1X endurance)	SATA	3.8 TB
HX-SD960GBHTNK9**	[FIPS Compliant] 960GB Enterprise value SAS SSD (1X FWPD, SED)	SAS	960 GB
HX-SD38TBHTNK9**	[FIPS Compliant] 3.8TB Enterprise value SAS SSD (1X FWPD, SED)	SAS	3.8TB
HX-NVMEHW-I1000*	1TB 2.5 inch Ent. Perf. NVMe SSD (1X endurance)	NVMe	1 TB
HX-NVMEHW-I4000*	4TB 2.5 inch Ent. Perf NVMe SSD (1X endurance)	NVMe	4 TB
<b>Caching Drives</b>			
HX-NVMEXP-I375*	375GB 2.5 inch Intel Optane Drive, Extreme Perf & Endurance	NVMe	375 GB
HX-NVMEHW-H1600*	1.6TB 2.5 inch Ent. Perf. NVMe SSD (3X endurance)	NVMe	1.6 TB
HX-SD400G12TX-EP	400GB 2.5 inch Ent. Perf. 12G SAS SSD (10X endurance)	SAS	400 GB
HX-SD800GBENK9**	800GB 2.5 inch Ent. Perf. 12G SAS SED SSD (10X endurance)	SAS	800 GB
HX-SD16T123X-EP	1.6TB 2.5 inch Enterprise performance 12G SAS SSD(3X endurance) (HyperFlex Release 3.5(2b) and later)	SAS	1.6 TB
<b>System / Log Drives</b>			
HX-SD240G61X-EV	240GB 2.5 inch Enterprise Value 6G SATA SSD	SATA	240 GB
HX-SD240GM1X-EV	240GB 2.5 inch Enterprise Value 6G SATA SSD (HyperFlex Release 3.5(2a) and later)	SATA	240 GB

Table 6 Available Sled-Mounted SSDs (*continued*)

Product ID (PID)	PID Description	Drive Type	Capacity
HX-NVMELW-I500	Cisco 2.5" U.2 500GB Intel P4501 NVMe Med. Perf. Value Endurance	NVMe	500 GB
<b>Boot Drives</b>			
HX-M2-240GB	240GB SATA M.2 SSD	SATA	240 GB

**NOTE:**

- Cisco uses solid state drives (SSDs) from a number of vendors. All solid state drives (SSDs) are subject to physical write limits and have varying maximum usage limitation specifications set by the manufacturer. Cisco will not replace any solid state drives (SSDs) that have exceeded any maximum usage specifications set by Cisco or the manufacturer, as determined solely by Cisco.
- \*\* SED drive components are not supported with Microsoft Hyper-V
- \* NVMe cache drive components are not supported with Microsoft Hyper-V

**Approved Configurations**

Select the following drives:

- 6 to 8 capacity drives - 960GB 2.5 inch Enterprise Value 6G SATA SSD (HX-SD960G61X-EV) OR 3.8TB 2.5 inch Enterprise Value 6G SATA SSD (HX-SD38T61X-EV) OR 960GB 2.5 Inch Enterprise Value 6G SATA SED SSD (HX-SD960GBE1NK9) OR 3.8TB 2.5 inch Enterprise Value 6G SATA SED SSD (HX-SD38TBE1NK9) OR 800GB 2.5 inch Enterprise Perf. 12G SAS SED SSD (HX-SD800GBENK9) OR 960GB Enterprise value SAS SSD (1X FWPD, SED) (HX-SD960GBHTNK9) OR 3.8TB Enterprise value SAS SSD (1X FWPD, SED) (HX-SD38TBHTNK9) OR 1TB 2.5 inch Enterprise Perf. NVMe SSD (HX-NVMEHW-I1000) OR 4TB 2.5 inch Enterprise Perf. NVMe SSD (HX-NVMEHW-I4000)



**NOTE:** Less than 6 non-SED capacity drives is supported for HX Edge configuration  
SED drives are not supported for HX Edge configuration  
If you select 'SED capacity' drives, you must choose 'SED cache' drives below

- One cache drive - 1.6TB 2.5 inch Enterprise Performance NVMe SSD (HX-NVMEHW-H1600) OR 375GB 2.5 inch Intel Optane Drive, Extreme Perf & Endurance (HX-NVMEXP-I375) OR 400GB 2.5 inch Enterprise Performance 12G SAS SSD (HX-SD400G12TX-EP) OR 800GB 2.5 inch Enterprise Performance 12G SAS SED SSD (HX-SD800GBENK9) OR 1.6TB 2.5 inch Enterprise performance 12G SAS SSD (HX-SD16T123X-EP)



**NOTE:** 'SED cache' drive can only be selected if you have selected 'SED capacity' drives  
NVMe Cache drive is not available for HX Edge configurations  
SED & NVMe Cache drives are not supported with Microsoft Hyper-V

- One system drive - 240GB 2.5 inch Enterprise Value 6G SATA SSD (HX-SD240G61X-EV) OR

240GB 2.5 inch Enterprise Value 6G SATA SSD (HX-SD240GM1X-EV)

- One boot drive - 240GB M.2 SATA SSD boot drive (HX-M2-240GB)

#### Caveats

---

You must choose up to eight SSD data drives, one caching drive, one system drive and one boot drive.

If you select Self Encrypting Drives (SEDs), you must adhere to the following

- You must select minimum of 6 'capacity' drives
- All selected 'cache' and 'capacity' drives must be SED drives

## STEP 6 SELECT PCIe OPTION CARD(S)

The standard PCIe card offerings is:

- Modular LAN on Motherboard (mLOM)
- Virtual Interface Card (VICs)
- Network Interface Card (NICs)

### Select PCIe Option Card

The available PCIe option card is listed in [Table 7](#).

Table 7 Available PCIe Option Cards

Product ID (PID)	PID Description	Card Height
Modular LAN on Motherboard (mLOM) <sup>1</sup>		
HX-MLOM-C40Q-03	Cisco VIC 1387 Dual Port 40Gb QSFP CNA MLOM	N/A
HX-MLOM-C25Q-04	Cisco UCS VIC 1457 Quad Port 10/25G SFP28 CNA MLOM	N/A
Virtual Interface Cards (VICs)		
HX-PCIE-C40Q-03	Cisco VIC 1385 Dual Port 40Gb QSFP+ CNA w/	HHHL*
HX-PCIE-C25Q-04	Cisco UCS VIC 1455 Quad Port 10/25G SFP28 CNA PCIe	HHHL*
Network Interface Cards (NICs) <sup>2,3</sup>		
HX-PCIE-IRJ45	Intel i350 Quad Port 1Gb Adapter	HHHL*
HX-PCIE-ID10GF	Intel X710-DA2 Dual Port 10G SFP+ NIC	HHHL*
HX-PCIE-ID10GC	Intel X550-T2 Dual Port 10GBase-T NIC	HHHL*
HX-PCIE-ID25GF	Intel XXV710-DA2 10-Dual Port 25G NIC	HHHL*
* HHHL= Half Height Half length		

#### Notes:

1. The mLOM card does not plug into any of the riser 1 or riser 2 card slots; instead, it plugs into a connector inside the chassis.
2. The NIC is supported for HyperFlex Edge configurations.
3. The NIC is not supported with Microsoft Hyper-V.

### Caveats

Other considerations for the Cisco VIC 1387 card:

- VIC 1387 natively supports 6300 series FI.
- VIC 1387 also supports Cisco QSA Modules when working with HX-FI-6248UP or HX-FI-6296UP is desired.

- Cisco QSA Module is available as an option under 'Accessories -> SFP'. PID for QSA is CVR-QSFP-SFP10G'
- Please order two of above QSA modules when connectivity with 6200 is desired
- Use of 10GbE is not permitted with 6300 series FI.



## STEP 7 ORDER POWER SUPPLY

Power supplies share a common electrical and physical design that allows for hot-plug and tool-less installation into HXAF220c M5 Nodes. Each power supply is certified for high-efficiency operation and offers multiple power output options. This allows users to “right-size” based on server configuration, which improves power efficiency, lower overall energy costs and avoids stranded capacity in the data center. Use the power calculator at the following link to determine the needed power based on the options chosen (CPUs, drives, memory, and so on):

<http://ucspowercalc.cisco.com>

Select one or two power supplies from the list in *Table 8*

Table 8 Power Supply

Product ID (PID)	PID Description
HX-PSU1-770W	770W AC power supply for C-Series Servers
HX-PSU1-1050W	1050W AC power supply for C-Series servers
HX-PSUV2-1050DC	1050W DC power supply for C-Series servers
HX-PSU1-1600W	1600W power supply for C-Series servers



NOTE: In a server with two power supplies, both power supplies must be identical.

## STEP 8 SELECT POWER CORD(s)

Using [Table 9](#), select the appropriate AC power cords. You can select zero to two power cords. If you select the option R2XX-DMYMPWRCORD, no power cord is shipped with the server.

Table 9 Available Power Cords

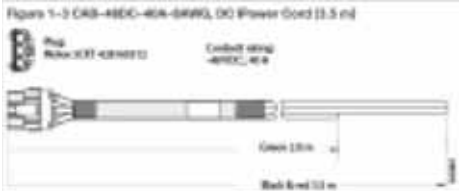
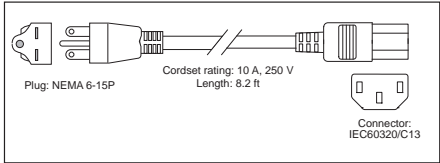
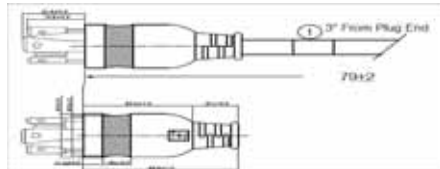
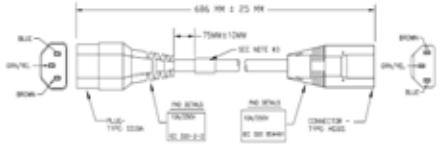
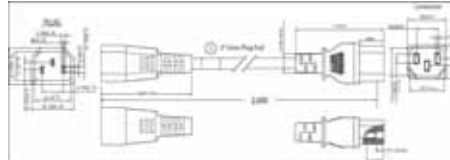
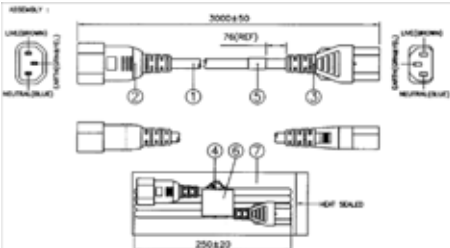
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-48DC-40A-8AWG	C-Series -48VDC PSU Power Cord, 3.5M, 3 Wire, 8AWG, 40A	 <p>Figure 1-3 CAB-48DC-40A-8AWG, DC Power Cord (3.5 m)</p>
CAB-N5K6A-NA	Power Cord, 200/240V 6A, North America	 <p>Plug: NEMA 6-15P Cordset rating: 10 A, 250 V Length: 8.2 ft Connector: IEC60320/C13</p>
CAB-AC-L620-C13	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft	 <p>3' From Plug End 70x2</p>
CAB-C13-CBN	CABASY,WIRE,JUMPER CORD, 27" L, C13/C14, 10A/250V	 <p>686 MM ± 25 MM 70MM ± 10MM C13 C14 C13 C14</p>
CAB-C13-C14-2M	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V	 <p>2000 ± 50 70(40)7 C13 C14 C13 C14</p>
CAB-C13-C14-AC	CORD,PWR,JMP,IEC60320/C14,IEC60320/C13, 3.0M	 <p>2000 ± 50 70(40)7 IEC60320/C14 IEC60320/C13 IEC60320/C14 IEC60320/C13</p>

Table 9 Available Power Cords

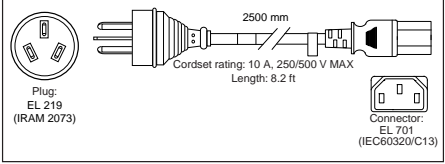
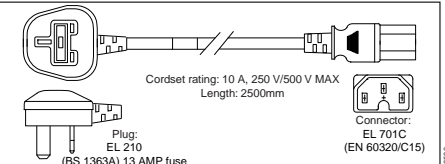
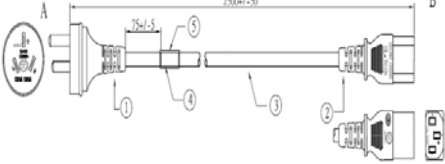
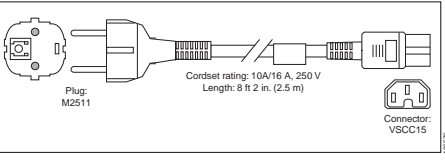
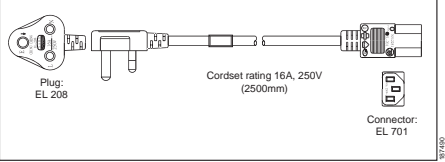
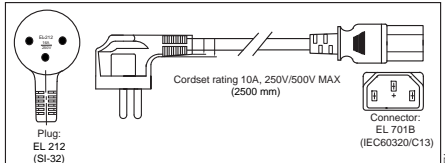
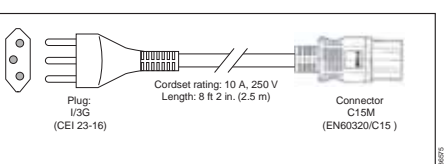
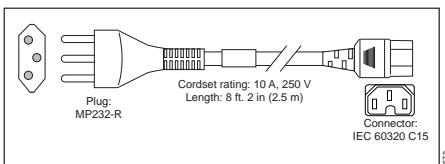
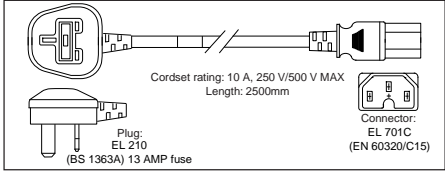
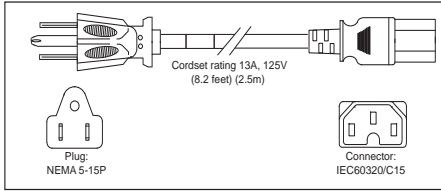
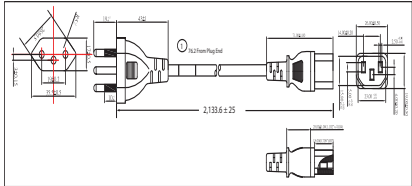
Product ID (PID)	PID Description	Images
CAB-250V-10A-AR	Power Cord, 250V, 10A, Argentina	 <p>Plug: EL 219 (IRAM 2073) Cordset rating: 10 A, 250/500 V MAX Length: 8.2 ft Connector: EL 701 (IEC60320/C13)</p>
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	 <p>Plug: EL 210 (BS 1363A) 13 AMP fuse Cordset rating: 10 A, 250 V/500 V MAX Length: 2500mm Connector: EL 701C (EN 60320/C15)</p>
CAB-250V-10A-CN	AC Power Cord - 250V, 10A - PRC	 <p>Plug: EL 210 (BS 1363A) 13 AMP fuse Cordset rating: 10 A, 250 V/500 V MAX Length: 2500mm Connector: EL 701C (EN 60320/C15)</p>
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU	 <p>Plug: M2511 Cordset rating: 10A/16 A, 250 V Length: 8 ft 2 in, (2.5 m) Connector: VSCC15</p>
CAB-250V-10A-ID	Power Cord, 250V, 10A, India	 <p>Plug: EL 208 Cordset rating 16A, 250V (2500mm) Connector: EL 701</p>
CAB-250V-10A-IS	Power Cord, SFS, 250V, 10A, Israel	 <p>Plug: EL 212 (SI-32) Cordset rating 10A, 250V/500V MAX (2500 mm) Connector: EL 701B (IEC60320/C13)</p>
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	 <p>Plug: I/SG (CEI 23-16) Cordset rating: 10 A, 250 V Length: 8 ft 2 in, (2.5 m) Connector: C15M (EN60320/C15)</p>
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	 <p>Plug: MP232-R Cordset rating: 10 A, 250 V Length: 8 ft. 2 in, (2.5 m) Connector: IEC 60320 C15</p>

Table 9 Available Power Cords

Product ID (PID)	PID Description	Images
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	
CAB-9K12A-NA <sup>1</sup>	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	
CAB-250V-10A-BR	Power Cord - 250V, 10A - Brazil	
CAB-C13-C14-2M-JP	Power Cord C13-C14, 2M/6.5ft Japan PSE mark	Image not available
CAB-9K10A-KOR <sup>1</sup>	Power Cord, 125VAC 13A KSC8305 Plug, Korea	Image not available
CAB-ACTW	AC Power Cord (Taiwan), C13, EL 302, 2.3M	Image not available
CAB-JPN-3PIN	Japan, 90-125VAC 12A NEMA 5-15 Plug, 2.4m	Image not available

Notes:

1. This power cord is rated to 125V and only supported for PSU rated at 1050W or less

## STEP 9 SELECT ACCESSORIES

Select

---

1. Internal microSD Card Module HX-MSD-32G.
  - This is a required component.
  - The micro-SD card mounts internally on riser 1.
  - The micro-SD card serves as a dedicated local resource for utilities such as HUU. Images can be pulled from a file share (NFS/CIFS) and uploaded to the cards for future use.
2. Optional SFP adapter CVR-QSFP-SFP10G.
  - This is optional and only needed if connection to 6200 series FI (HX-FI-6248UP, HX-FI-6296UP) is desired.
  - When choosing this option, please choose two QSAs per server.

## STEP 10 ORDER TOOL-LESS RAIL KIT AND OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM

Select a Tool-Less Rail Kit

---

Select a tool-less rail kit from [Table 10](#).

Table 10 Tool-less Rail Kit Options

Product ID (PID)	PID Description
HX-RAILF-M4	Friction Rail Kit for HXAF220c M5 Nodes
HX-RAILB-M4	Ball Bearing Rail Kit for HXAF220c M5 Node

Select an Optional Reversible Cable Management Arm

---

The reversible cable management arm mounts on either the right or left slide rails at the rear of the server and is used for cable management. Use [Table 11](#) to order a cable management arm.

Table 11 Cable Management Arm

Product ID (PID)	PID Description
HX-CMAF-M4	Reversible CMA for M4 & M5 rack servers

For more information about the tool-less rail kit and cable management arm, see the *Cisco UCS C220 M5 Installation and Service Guide* at this URL:

[https://www.cisco.com/c/en/us/td/docs/unified\\_computing/ucs/c/hw/C220M5/install/C220M5.html](https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C220M5/install/C220M5.html)



**NOTE:** If you plan to rackmount your HXAF220c M5 Node, you must order a tool-less rail kit. The same rail kits and CMA's are used for M4 and M5 servers.

---

## STEP 11 SELECT HYPERVISOR / HOST OPERATING SYSTEM

Hypervisor/Operating systems options are available as follows. Select either VMware ESXi or Microsoft Windows Server with Hyper-V PIDs as desired from [Table 12](#)

Table 12 Hypervisor/Host Operating System

Product ID (PID)	PID Description
<b>VMware<sup>1</sup></b>	
HX-VSP-FND-D	Factory Installed - vSphere SW (End user to provide License)
HX-VSP-EPL-D	Factory Installed - VMware vSphere6 Ent Plus SW+Lic (2 CPU)
HX-VSP-STD-D	Factory Installed - VMware vSphere6 Std SW and Lic (2 CPU)
HX-VSP-6-5-FND-D	Factory Installed - vSphere SW 6.5 (End user to provide License)
HX-VSP-6-5-EPL-D	Factory Installed - VMware vSphere 6.5 Ent Plus SW+Lic (2 CPU)
HX-VSP-6-5-STD-D	Factory Installed - VMware vSphere 6.5 Std SW and Lic (2 CPU)
HX-VSP-6-7-FND-D	Factory Installed -vSphere SW 6.7 Enduser to provide License
HX-VSP-6-7-EPL-D	Factory Installed - VMware vSphere 6.7 Ent Plus SW+Lic (2-CPU)
HX-VSP-6-7-STD-D	Factory Installed - VMware vSphere 6.7 Std SW and Lic (2CPU)
<b>VMWare PAC Licenses<sup>2</sup></b>	
HX-VSP-EPL-1A	VMware vSphere 6 Ent Plus (1 CPU), 1-yr, Support Required Cisco
HX-VSP-EPL-3A	VMware vSphere 6 Ent Plus (1 CPU), 3-yr, Support Required Cisco
HX-VSP-EPL-5A	VMware vSphere 6 Ent Plus (1 CPU), 5-yr, Support Required Cisco
HX-VSP-STD-1A	VMware vSphere 6 Standard (1 CPU), 1-yr, Support Required Cisco
HX-VSP-STD-3A	VMware vSphere 6 Standard (1 CPU), 3-yr, Support Required Cisco
HX-VSP-STD-5A	VMware vSphere 6 Standard (1 CPU), 5-yr, Support Required Cisco
<b>Microsoft Hyper-V<sup>3,4</sup></b>	
HX-MSWS-OPT-OUT	No Factory Install - Windows Server 2016 Data Center

Notes:

1. Although VMware 6.0 is installed at the factory, VMware 6.5 is also supported.
2. Choose quantity of two when choosing PAC licensing for dual CPU systems.
3. Microsoft Windows Server with Hyper-V will NOT be installed in Cisco Factory. Customers need to bring their own Windows Server ISO image that needs to be installed at deployment site.
4. To ensure the best possible Day 0 Installation experience, mandatory Installation Services are required with all Hyper-V orders. Details on PIDs can be found in HyperFlex Ordering Guide.

**STEP 12 SELECT HX DATA PLATFORM SOFTWARE**

HyperFlex Data Platform Edition & Subscription Period options are available as follows. Select as desired from [Table 13](#)

Table 13 HX Data Platform Software

Product ID (PID)	PID Description
HXDP-S001-1YR=	Cisco HyperFlex Data Platform Standard Edition 1 yr Subscription
HXDP-S001-2YR=	Cisco HyperFlex Data Platform Standard Edition 2 yr Subscription
HXDP-S001-3YR=	Cisco HyperFlex Data Platform Standard Edition 3 yr Subscription
HXDP-S001-4YR=	Cisco HyperFlex Data Platform Standard Edition 4 yr Subscription
HXDP-S001-5YR=	Cisco HyperFlex Data Platform Standard Edition 5 yr Subscription
HXDP-P001-1YR=	Cisco HyperFlex Data Platform Enterprise Edition 1 yr Subscription
HXDP-P001-2YR=	Cisco HyperFlex Data Platform Enterprise Edition 2 yr Subscription
HXDP-P001-3YR=	Cisco HyperFlex Data Platform Enterprise Edition 3 yr Subscription
HXDP-P001-4YR=	Cisco HyperFlex Data Platform Enterprise Edition 4 yr Subscription
HXDP-P001-5YR=	Cisco HyperFlex Data Platform Enterprise Edition 5 yr Subscription



## STEP 13 SELECT INSTALLATION SERVICE

To ensure the best possible Day 0 Installation experience, mandatory Installation Services are required with all Hyper-V orders. Customers can purchase Cisco Advanced Services (AS) or Cisco Learning partner mentored Services. Select as desired from [Table 14](#)

Table 14 Installation services

Product ID (PID)	PID Description
<b>Cisco Advanced Services</b>	
ASF-ULT2-HPF-QSS	Quick Start Services - 1 Week
ASF-ULT2-HPF-ADS	Accelerated Deployment Services - 2 Weeks
AS-DCN-CNSLT	Advanced Services Consulting
<b>Cisco Learning Partner Mentored Services</b>	
HXDP-P001-1YR=	Cisco HyperFlex Data Platform Enterprise Edition 1 yr Subscription
HXDP-P001-2YR=	Cisco HyperFlex Data Platform Enterprise Edition 2 yr Subscription

## STEP 14 SELECT SERVICE and SUPPORT LEVEL

A variety of service options are available, as described in this section.

### Smart Net Total Care (SNTC)

For support of the entire Unified Computing System, Cisco offers the Cisco Smart Net Total Care for UCS Service. This service provides expert software and hardware support to help sustain performance and high availability of the unified computing environment. Access to Cisco Technical Assistance Center (TAC) is provided around the clock, from anywhere in the world

For systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Cisco Smart Net Total Care for UCS Service includes flexible hardware replacement options, including replacement in as little as two hours. There is also access to Cisco's extensive online technical resources to help maintain optimal efficiency and uptime of the unified computing environment. For more information please refer to the following url: <http://www.cisco.com/c/en/us/services/technical/smart-net-total-care.html?stickynav=1>  
You can choose a desired service listed in *Table 15*.

Table 15 Cisco SNTC Service (PID HXAF220C-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-PREM-AF220CM5	C2P	Yes	SNTC 24X7X2OS
CON-UCSD8-AF220CM5	UCSD8	Yes	UC SUPP DR 24X7X2OS*
CON-C2PL-AF220CM5	C2PL	Yes	LL 24X7X2OS**
CON-OSP-AF220CM5	C4P	Yes	SNTC 24X7X4OS
CON-UCSD7-AF220CM5	UCSD7	Yes	UCS DR 24X7X4OS*
CON-C4PL-AF220CM5	C4PL	Yes	LL 24X7X4OS**
CON-USD7L-AF220CM5	USD7L	Yes	LLUCS HW DR 24X7X4OS***
CON-OSE-AF220CM5	C4S	Yes	SNTC 8X5X4OS
CON-UCSD6-AF220CM5	UCSD6	Yes	UC SUPP DR 8X5X4OS*
CON-SNCO-AF220CM5	SNCO	Yes	SNTC 8x7xNCDOS****
CON-OS-AF220CM5	CS	Yes	SNTC 8X5XNBDOS
CON-UCSD5-AF220CM5	UCSD5	Yes	UCS DR 8X5XNBDOS*
CON-S2P-AF220CM5	S2P	No	SNTC 24X7X2
CON-S2PL-AF220CM5	S2PL	No	LL 24X7X2**
CON-SNTP-AF220CM5	SNTP	No	SNTC 24X7X4
CON-SNTPL-AF220CM5	SNTPL	No	LL 24X7X4**
CON-SNTE-AF220CM5	SNTE	No	SNTC 8X5X4
CON-SNC-AF220CM5	SNC	No	SNTC 8x7xNCD****
CON-SNT-AF220CM5	SNT	No	SNTC 8X5XNBD
CON-SW-AF220CM5	SW	No	SNTC NO RMA

\*Includes Drive Retention (see below for full description)  
 \*\*Includes Local Language Support (see below for full description) - Only available in China and Japan  
 \*\*\*Includes Local Language Support and Drive Retention - Only available in China and Japan  
 \*\*\*\*Available in China only

### Smart Net Total Care with Onsite Troubleshooting Service

An enhanced offer over traditional Smart Net Total Care which provides onsite troubleshooting expertise to aid in the diagnostics and isolation of hardware issue within our customers' Cisco Hyper-Converged environment. It is delivered by a Cisco Certified field engineer (FE) in collaboration with remote TAC engineer and Virtual Internet working Support Engineer (VISE). You can choose a desired service listed in [Table 16](#)

Table 16 SNTC with UCS Onsite Troubleshooting Service (PID HXAF220C-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-OSPT-AF220CM5	OSPT	Yes	24X7X40S Trblshtg
CON-OSPTD-AF220CM5	OSPTD	Yes	24X7X40S TrblshtgDR*
CON-OSPTL-AF220CM5	OSPTL	Yes	24X7X40S TrblshtgLL**
CON-OPTLD-AF220CM5	OPTLD	Yes	24X7X40S TrblshtgLLD***
*Includes Drive Retention (see below for full description)			
**Includes Local Language Support (see below for full description) – Only available in China and Japan			
***Includes Local Language Support and Drive Retention – Only available in China and Japan			

### Solution Support

Solution Support includes both Cisco product support and solution-level support, resolving complex issues in multivendor environments, on average, 43% more quickly than product support alone. Solution Support is a critical element in data center administration, to help rapidly resolve any issue encountered, while maintaining performance, reliability, and return on investment.

This service centralizes support across your multivendor Cisco environment for both our products and solution partner products you've deployed in your ecosystem. Whether there is an issue with a Cisco or solution partner product, just call us. Our experts are the primary point of contact and own the case from first call to resolution. For more information please refer to the following url:

<http://www.cisco.com/c/en/us/services/technical/solution-support.html?stickynav=1>

You can choose a desired service listed in [Table 17](#)

Table 17 Solution Support Service (PID HXAF220C-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-SSC2P-AF220CM5	SSC2P	Yes	SOLN SUPP 24X7X20S
CON-SSC4P-AF220CM5	SSC4P	Yes	SOLN SUPP 24X7X40S
CON-SSC4S-AF220CM5	SSC4S	Yes	SOLN SUPP 8X5X40S

Table 17 Solution Support Service (PID HXAF220C-M5SX)

CON-SSCS-AF220CM5	SSCS	Yes	SOLN SUPP 8X5XNBDOS
CON-SSDR7-AF220CM5	SSDR7	Yes	SSPT DR 24X7X4OS*
CON-SSDR5-AF220CM5	SSDR5	Yes	SSPT DR 8X5XNBDOS*
CON-SSS2P-AF220CM5	SSS2P	No	SOLN SUPP 24X7X2
CON-SSSNP-AF220CM5	SSSNP	No	SOLN SUPP 24X7X4
CON-SSSNE-AF220CM5	SSSNE	No	SOLN SUPP 8X5X4
CON-SSSNC-AF220CM5	SSSNC	No	SOLN SUPP NCD**
CON-SSSNT-AF220CM5	SSSNT	No	SOLN SUPP 8X5XNBD

Includes Drive Retention (see below for description)

\*\*Available in China only

#### Partner Support Service for UCS

Cisco Partner Support Service (PSS) is a Cisco Collaborative Services service offering that is designed for partners to deliver their own branded support and managed services to enterprise customers. Cisco PSS provides partners with access to Cisco's support infrastructure and assets to help them:

- Expand their service portfolios to support the most complex network environments
- Lower delivery costs
- Deliver services that increase customer loyalty

PSS options enable eligible Cisco partners to develop and consistently deliver high-value technical support that capitalizes on Cisco intellectual assets. This helps partners to realize higher margins and expand their practice.

PSS is available to all Cisco PSS partners.

PSS provides hardware and software support, including triage support for third party software, backed by Cisco technical resources and level three support. You can choose a desired service listed in [Table 18](#).

Table 18 PSS (PID HXAF220C-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-PSJ8-AF220CM5	PSJ8	Yes	UCS PSS 24X7X2 OS
CON-PSJ7-AF220CM5	PSJ7	Yes	UCS PSS 24X7X4 OS
CON-PSJD7-AF220CM5	PSJD7	Yes	UCS PSS 24X7X4 DR*
CON-PSJ6-AF220CM5	PSJ6	Yes	UCS PSS 8X5X4 OS
CON-PSJD6-AF220CM5	PSJD6	Yes	UCS PSS 8X5X4 DR*
CON-PSJ4-AF220CM5	PSJ4	No	UCS SUPP PSS 24X7X2
CON-PSJ3-AF220CM5	PSJ3	No	UCS SUPP PSS 24X7X4

Table 18 PSS (PID HXAF220C-M5SX)

CON-PSJ2-AF220CM5	PSJ2	No	UCS SUPP PSS 8X5X4
CON-PSJ1-AF220CM5	PSJ1	No	UCS SUPP PSS 8X5XNBD
*Includes Drive Retention (see below for description)			

### Combined Support Service

Combined Services makes it easier to purchase and manage required services under one contract. The more benefits you realize from the Cisco HyperFlex System, the more important the technology becomes to your business. These services allow you to:

- Optimize the uptime, performance, and efficiency of your HyperFlex System
- Protect your vital business applications by rapidly identifying and addressing issues
- Strengthen in-house expertise through knowledge transfer and mentoring
- Improve operational efficiency by allowing HyperFlex experts to augment your internal staff resources
- Enhance business agility by diagnosing potential issues before they affect your operations

You can choose a desired service listed in [Table 19](#)

Table 19 Combined Support Service (PID HXAF220C-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-NCF2P-AF220CM5	NCF2P	Yes	CMB SVC 24X7X2OS
CON-NCF4P-AF220CM5	NCF4P	Yes	CMB SVC 24X7X4OS
CON-NCF4S-AF220CM5	NCF4S	Yes	CMB SVC 8X5X4OS
CON-NCFCS-AF220CM5	NCFCS	Yes	CMB SVC 8X5XNBDOS
CON-NCF2-AF220CM5	NCF2	No	CMB SVC 24X7X2
CON-NCFP-AF220CM5	NCFP	No	CMB SVC 24X7X4
CON-NCFE-AF220CM5	NCFE	No	CMB SVC 8X5X4
CON-NCFT-AF220CM5	NCFT	No	CMB SVC 8X5XNBD
CON-NCFW-AF220CM5	NCFW	No	CMB SVC SW

### UCS Drive Retention Service

With the Cisco Drive Retention Service, you can obtain a new disk drive in exchange for a faulty drive without returning the faulty drive.

Sophisticated data recovery techniques have made classified, proprietary, and confidential information vulnerable, even on malfunctioning disk drives. The Drive Retention service enables you to retain your drives and ensures that the sensitive data on those drives is not compromised, which reduces the risk of any potential liabilities. This service also enables you to comply with regulatory, local, and federal requirements.

If your company has a need to control confidential, classified, sensitive, or proprietary data, you might want to consider one of the Drive Retention Services listed in the above tables (where available)



**NOTE:** Cisco does not offer a certified drive destruction service as part of this service.

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#### Local Language Technical Support for UCS

Where available, and subject to an additional fee, local language support for calls on all assigned severity levels may be available for specific product(s) - see tables above.

For a complete listing of available services for Cisco HyperFlex System, see the following URL:  
<https://www.cisco.com/c/en/us/services/technical.html?stickynav=1>

## OPTIONAL STEP - ORDER RACK(s)

The optional R42612 rack is available from Cisco for the C-Series servers, including the HXAF220c M5 Node. This rack is a standard 19-inch rack and can be ordered with a variety of options, as listed in [Table 20](#). Racks are shipped separately from the HXAF220c M5 Node.

Table 20 Racks and Rack Options

Product ID (PID)	PID Description
RACK2-UCS	Cisco R42612 expansion rack, no side panels.
RACK2-UCS2	This type of rack is used for multiple-rack deployments. Cisco R42612 static (standard) rack, with side panels.
RACK-BLANK-001	This type of rack is used for single-rack and end of row deployments. Side panels are needed for racks at the ends of multiple-rack deployments. For example, when configuring a row of 5 racks, order 1 standard rack plus 4 expansion racks. Apply the side panels from the standard rack to the racks at each end of the row. Blanking panels (qty 12), 1U, plastic, toolless.
RACK-CBLMGT-001	Recommended to ensure proper airflow. Fill all empty RU spaces in the front of the rack. Because each blanking panel PID includes 12 panels, use the following calculation: 42RU - occupied RU = available RU. Divide available RU by 12 to determine PID order quantity. Cable mgt D rings (qty 10), metal.
RACK-CBLMGT-003	Use the D rings to bundle system cables to ensure proper airflow. Brush strip (qty 1), 1 U.
RACK-CBLMGT-011	The brush strip promotes proper airflow while allowing cables to be passed from the front to the rear of the rack. Cable mgt straps (qty 10), Velcro.
RACK-FASTEN-001	Use the Velcro straps to bundle system cables to ensure proper airflow. Mounting screws (qty 100), M6.
RACK-FASTEN-002	The rack ships with nuts and screws, but extras may be ordered. Cage nuts (qty 50), M6.
RACK2-JOIN-001	The rack ships with nuts and screws, but extras may be ordered. Rack joining kit.
RACK2-GRND-001	Use the kit to connect adjacent racks within a row. Order 1 unit less than the number of racks in the row. Cisco R42612 grounding kit

## OPTIONAL STEP - ORDER PDU

An optional power distribution unit (PDU) is available from Cisco for the C-Series rack servers. This PDU is available in a zero rack unit (RU) style or horizontal PDU style. see Cisco RP-Series Rack and Rack PDU specification for more details at

<http://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/r-series-racks/rack-pdu-specsheet.pdf>



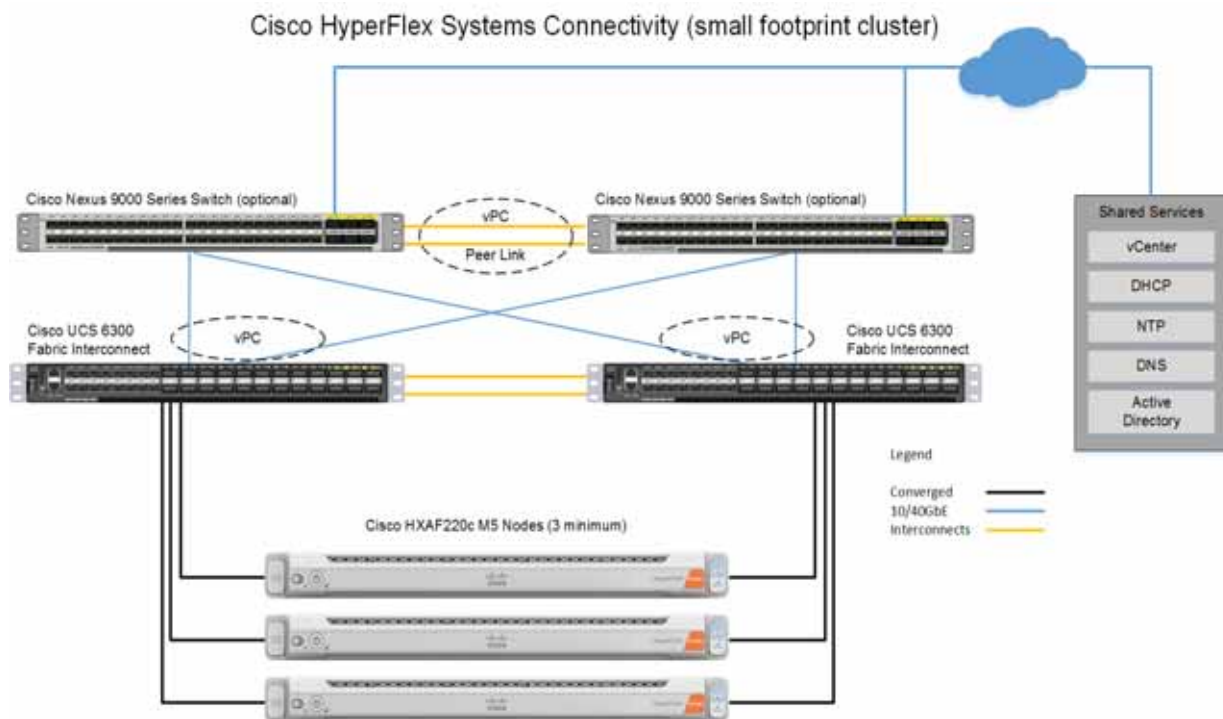
## SUPPLEMENTAL MATERIAL

### Hyperconverged Systems

Cisco HyperFlex Systems let you unlock the full potential of hyperconvergence and adapt IT to the needs of your workloads. The systems use an end-to-end software-defined infrastructure approach, combining software-defined computing in the form of Cisco HyperFlex HX-Series nodes; software-defined storage with the powerful Cisco HX Data Platform; and software-defined networking with the Cisco UCS fabric that will integrate smoothly with Cisco Application Centric Infrastructure (Cisco ACI). Together with a single point of connectivity and management, these technologies deliver a preintegrated and adaptable cluster with a unified pool of resources that you can quickly deploy, adapt, scale, and manage to efficiently power your applications and your business.

*Figure 5* show a small footprint cluster.

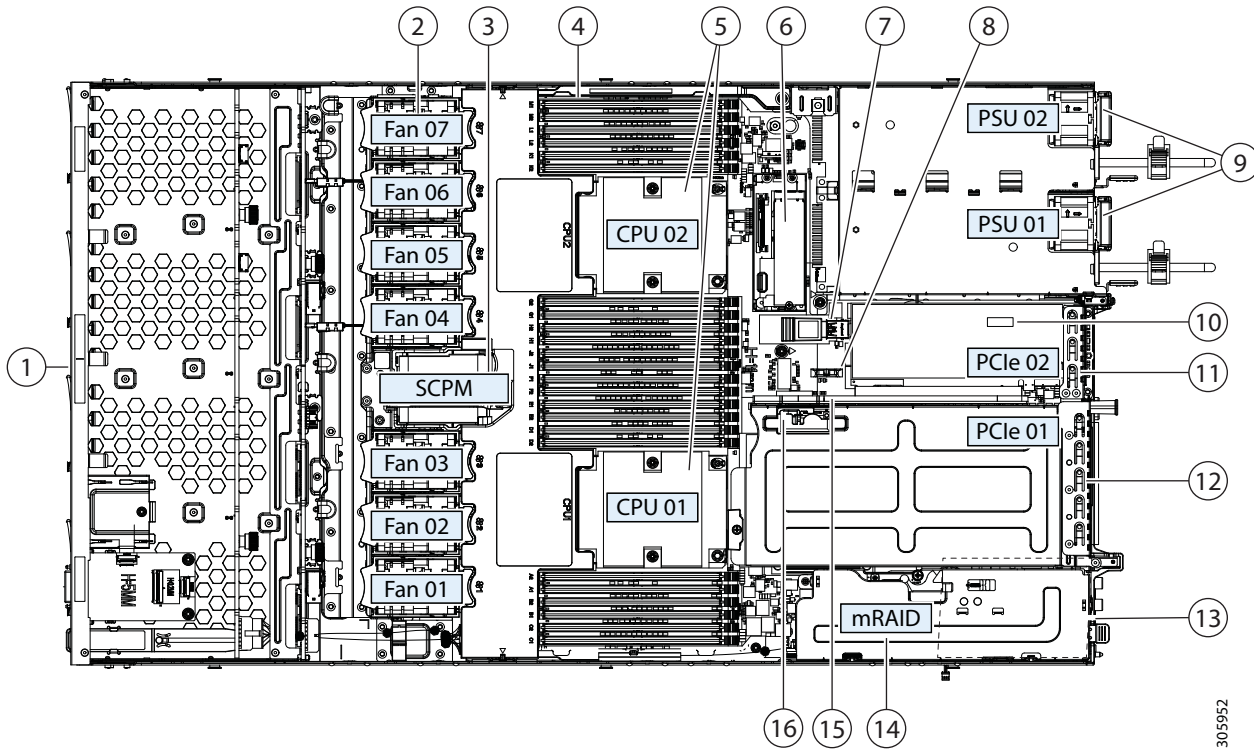
Figure 5 Small Footprint Cluster Using HXAF220c M5 Nodes



## CHASSIS

An internal view of the HXAF220c M5 Node chassis with the top cover removed is shown in [Figure 6](#).

Figure 6 HXAF220c M5 With Top Cover Off

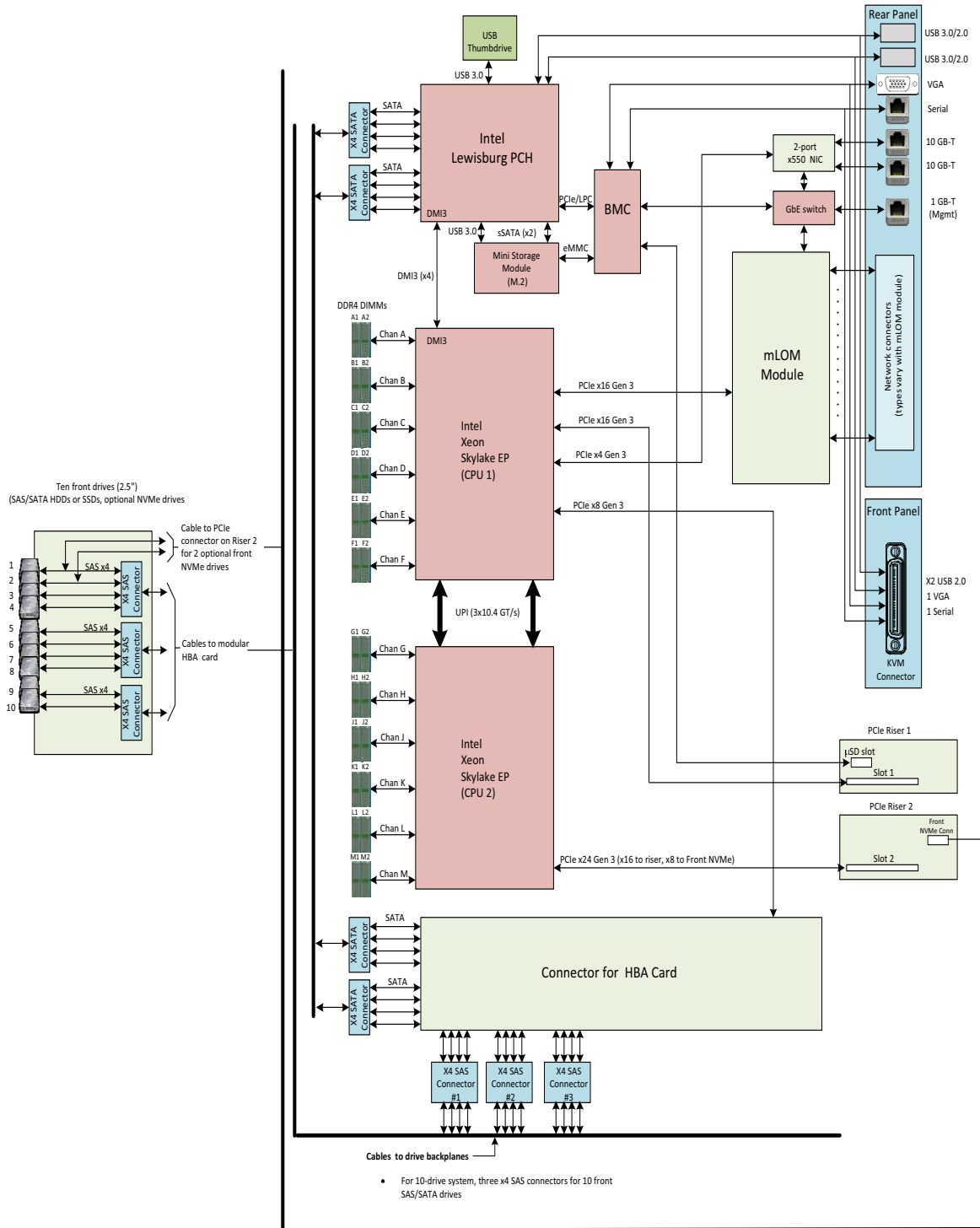


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1	Drive bays 1-10 are hot swappable	9	Power supplies (Hot-swappable when redundant as 1+1)
2	Cooling fan modules (seven)	10	Trusted platform module (TPM) socket on motherboard (not visible in this view)
3	N/A	11	PCIe slot 2 (half-height, x16); includes PCIe cable connector for SFF NVMe SSDs (x8)
4	DIMM sockets on motherboard (up to 12 per CPU; total 24)	12	PCIe slot 1 (full-height, x16); includes socket for Micro-SD card
5	CPUs and heatsinks (up to two)	13	Modular LOM (mLOM) card bay on chassis floor (x16) (not visible in this view)
6	Mini storage module connector For M.2 module with SATA M.2 SSD slots	14	Cisco 12 Gbps Modular SAS HBA controller card
7	Internal USB 3.0 port on motherboard	15	PCIe cable connectors for front-panel NVMe SSDs on PCIe riser 2
8	RTC battery vertical socket on motherboard	16	Micro-SD card socket on PCIe riser 1

# Block Diagram

Figure 7 HXAF220c M5 SFF Block Diagram

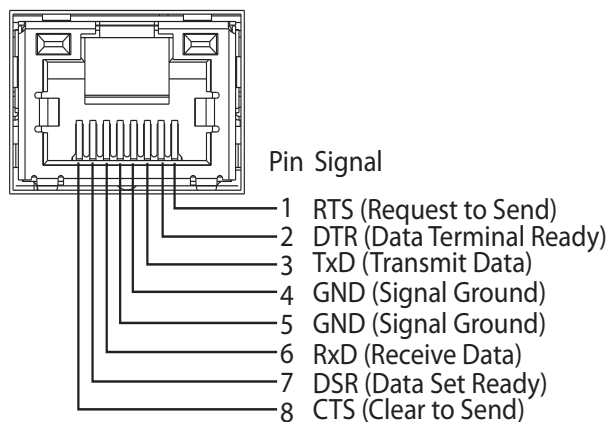


## Serial Port Details

The pinout details of the rear RJ-45 serial port connector are shown in *Figure 8*.

Figure 8 Serial Port (Female RJ-45 Connector) Pinout

### Serial Port (RJ-45 Female Connector)



## Upgrade and Servicing-Related Parts

This section lists the upgrade and servicing-related parts you may need during the life of your system. Some of these parts are configured with every system, and some may be ordered when needed or may be ordered and kept on hand as spares for future use.

Table 21 Upgrade and Servicing-related Parts for UCS HXAF220c M5 Server

Spare Product ID (PID)	Description
UCSC-HS-C220M5=	Heat sink for UCS C220 M5 rack servers 150W CPUs & below
UCSC-HS2-C220M5=	Heat sink for UCS C220 M5 rack servers CPUs above 150W
UCS-CPUAT=	CPU Assembly Tool for M5 Servers
UCS-CPU-TIM=	Single CPU thermal interface material syringe for M5 server HS seal
UCSX-HSCK=	UCS Processor Heat Sink Cleaning Kit For Replacement of CPU
UCS-M5-CPU-CAR=	UCS M5 CPU Carrier
CBL-NVME-C220FF=	C220 M5L/M5S PCIe SSD cable (1) for SFF & LFF chassis
UCSC-SATA-KIT-M5=	C220 M5 (2) SATA/SW RAID cables, 1U riser & interposer, for up to 8-drives
UCSC-SATAIN-220M5=	C220 M5 (8-drive) SATA Interposer board
UCSC-XRAIDR-220M5=	Riser to support SATA, MRAID for C220 M5 servers
UCSC-BBLKD-S2=	C-Series M5 SFF drive blanking panel
UCSC-PCIF-01H=	PCIe Low Profile blanking panel for UCS C-Series Server
UCSC-PCIF-01F=	PCIe Full Height blanking panel for UCS C-Series Server
UCSC-MLOM-BLK=	MLOM Blanking Panel
UCSC-RAILF-M4=	Friction Rail Kit for C220 M4 and M5 rack servers
UCSC-CMAF-M4=	Reversible CMA for C220 & C240 M4 & M5 rack servers
UCSC-RAILB-M4=	Ball Bearing Rail Kit for C220 & C240 M4 & M5 rack servers
UCSC-FAN-C220M5=	C220 M5 Fan Module (one)
N20-BKVM=	KVM cable for Server console port
UCSC-PSU-BLKP1U=	Power Supply Blanking Panel for C220 M5 and C240 M5 servers
UCS-MSTOR-SD=	Mini Storage Carrier for SD (holds up to 2)
UCS-MSTOR-M2=	Mini Storage Carrier for M.2 SATA/NVME (holds up to 2)

## RACKS

The Cisco R42612 rack is certified for Cisco UCS installation at customer sites and is suitable for the following equipment:

- Cisco UCS B-Series servers and fabric interconnects
- Cisco UCS C-Series and select Nexus switches

The rack is compatible with hardware designed for EIA-standard 19-inch racks. Cisco R42612 Rack. See Cisco RP-Series Rack and Rack PDU specification for more details at

<http://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/r-series-racks/rack-pdu-specsheet.pdf>

## PDU

Cisco RP Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

Cisco RP Series PDU models distribute power to up to 42 outlets. The architecture organizes power distribution, simplifies cable management, and enables you to move, add, and change rack equipment without an electrician.

With a Cisco RP Series PDU in the rack, you can replace up to two dozen input power cords with just one. The fixed input cord connects to the power source from overhead or under-floor distribution. Your IT equipment is then powered by PDU outlets in the rack using short, easy-to-manage power cords.

The C-series servers accept the zero-rack-unit (ORU) or horizontal PDU. See Cisco RP-Series Rack and Rack PDU specification for more details at

<http://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/r-series-racks/rack-pdu-specsheet.pdf>

## KVM CABLE

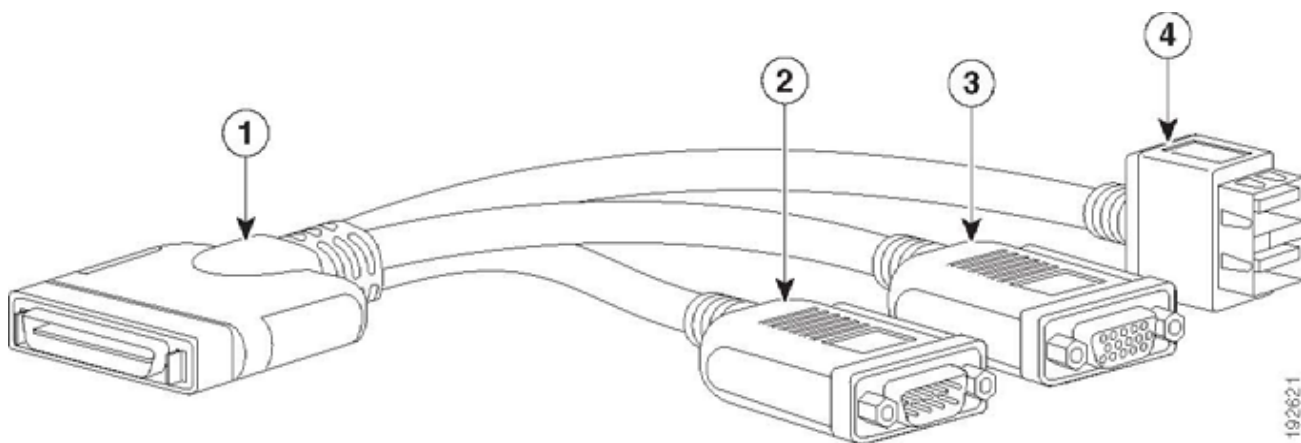
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in [Table 22](#).

Table 22 KVM Cable

Product ID (PID)	PID Description
N20-BKVM=	KVM cable for UCS Server console port

Figure 9 KVM Cable



1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB connector (for a mouse and keyboard)



## TECHNICAL SPECIFICATIONS

### Dimensions and Weight

Table 23 UCS HXAF220c M5 Dimensions and Weight

Parameter	Value
Height	1.7 in. (4.32 cm)
Width	16.89 in. (43.0 cm)
Depth	including handles: 18.98 in. (48.2 cm)
	29.8 in. (75.6 cm)
	including handles: 30.98 in. (78.7 cm)
Front Clearance	3 in. (76 mm)
Side Clearance	1 in. (25 mm)
Rear Clearance	6 in. (152 mm)
Weight	
Maximum (8 HDDs, 2 CPUs, 16 DIMMs, two power supplies)	37.5 lbs (17.0 kg)
Minimum (1 HDD, 1 CPU, 1 DIMM, one power supply)	29.0 lbs (13.2 kg)
Bare (0 HDD, 0 CPU, 0 DIMM, one power supply)	26.7 lbs (12.1 kg)

## Power Specifications

The server is available with the following types of power supplies:

- 770 W (AC) power supply (see [Table 24](#)).
- 1050 W (AC) power supply (see [Table 25](#)).
- 1050 W V2 (DC) power supply (see [Table 26](#))
- 1600 power supply (see [Table 27](#))

Table 24 UCS HXAF220c M5 Power Specifications (770 W AC power supply)

Parameter	Specification			
Input Connector	IEC320 C14			
Input Voltage Range (V rms)	100 to 240			
Maximum Allowable Input Voltage Range (V rms)	90 to 264			
Frequency Range (Hz)	50 to 60			
Maximum Allowable Frequency Range (Hz)	47 to 63			
Maximum Rated Output (W)	770			
Maximum Rated Standby Output (W)	36			
Nominal Input Voltage (V rms)	100	120	208	230
Nominal Input Current (A rms)	8.8	7.4	4.2	3.8
Maximum Input at Nominal Input Voltage (W)	855	855	855	846
Maximum Input at Nominal Input Voltage (VA)	882	882	882	872
Minimum Rated Efficiency (%) <sup>1</sup>	90	90	90	91
Minimum Rated Power Factor <sup>1</sup>	0.97	0.97	0.97	0.97
Maximum Inrush Current (A peak)	15			
Maximum Inrush Current (ms)	0.2			
Minimum Ride-Through Time (ms) <sup>2</sup>	12			

Notes:

1. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at <http://www.80plus.org/> for certified values
2. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

Table 25 UCS HXAF220c M5 1050 W (AC) Power Supply Specifications

Parameter	Specification
Input Connector	IEC320 C14
Input Voltage Range (V rms)	100 to 240
Maximum Allowable Input Voltage Range (V rms)	90 to 264
Frequency Range (Hz)	50 to 60

Table 25 UCS HXAF220c M5 1050 W (AC) Power Supply Specifications

Maximum Allowable Frequency Range (Hz)			47 to 63	
Maximum Rated Output (W) <sup>1</sup>		800		1050
Maximum Rated Standby Output (W)			36	
Nominal Input Voltage (V rms)	100	120	208	230
Nominal Input Current (A rms)	9.2	7.6	5.8	5.2
Maximum Input at Nominal Input Voltage (W)	889	889	1167	1154
Maximum Input at Nominal Input Voltage (VA)	916	916	1203	1190
Minimum Rated Efficiency (%) <sup>2</sup>	90	90	90	91
Minimum Rated Power Factor <sup>2</sup>	0.97	0.97	0.97	0.97
Maximum Inrush Current (A peak)			15	
Maximum Inrush Current (ms)			0.2	
Minimum Ride-Through Time (ms) <sup>3</sup>			12	

Notes:

1. Maximum rated output is limited to 800W when operating at low-line input voltage (100-127V)
2. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at <http://www.80plus.org/> for certified values
3. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

Table 26 UCS HXAF220c M5 1050 W (DC) Power Supply Specifications

Parameter	Specification
Input Connector	Molex 42820
Input Voltage Range (V rms)	-48
Maximum Allowable Input Voltage Range (V rms)	-40 to -72
Frequency Range (Hz)	NA
Maximum Allowable Frequency Range (Hz)	NA
Maximum Rated Output (W)	1050
Maximum Rated Standby Output (W)	36
Nominal Input Voltage (V rms)	-48
Nominal Input Current (A rms)	24
Maximum Input at Nominal Input Voltage (W)	1154
Maximum Input at Nominal Input Voltage (VA)	1154
Minimum Rated Efficiency (%) <sup>1</sup>	91
Minimum Rated Power Factor <sup>1</sup>	NA
Maximum Inrush Current (A peak)	15
Maximum Inrush Current (ms)	0.2
Minimum Ride-Through Time (ms) <sup>2</sup>	5

Notes:

1. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at <http://www.80plus.org/> for certified values
2. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

Table 27 UCS HXAF220c M5 1600 W Power Supply Specifications

Parameter	Specification			
Input Connector	IEC320 C14			
Input Voltage Range (V rms)	200 to 240			
Maximum Allowable Input Voltage Range (V rms)	180 to 264			
Frequency Range (Hz)	50 to 60			
Maximum Allowable Frequency Range (Hz)	47 to 63			
Maximum Rated Output (W) <sup>1</sup>	1600			
Maximum Rated Standby Output (W)	36			
Nominal Input Voltage (V rms)	100	120	208	230
Nominal Input Current (A rms)	NA	NA	8.8	7.9
Maximum Input at Nominal Input Voltage (W)	NA	NA	1778	1758
Maximum Input at Nominal Input Voltage (VA)	NA	NA	1833	1813
Minimum Rated Efficiency (%) <sup>2</sup>	NA	NA	90	91
Minimum Rated Power Factor <sup>2</sup>	NA	NA	0.97	0.97
Maximum Inrush Current (A peak)	30			
Maximum Inrush Current (ms)	0.2			
Minimum Ride-Through Time (ms) <sup>3</sup>	12			

Notes:

1. Maximum rated output is limited to 800W when operating at low-line input voltage (100-127V)
2. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at <http://www.80plus.org/> for certified values
3. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

For configuration-specific power specifications, use the Cisco UCS Power Calculator at this URL

<http://ucspowercalc.cisco.com>

## Environmental Specifications

The environmental specifications for the HXAF220c M5 server are listed in [Table 28](#).

Table 28 HXAF220c M5 Environmental Specifications

Parameter	Minimum
Operating Temperature	10°C to 35°C (50°F to 95°F) with no direct sunlight Maximum allowable operating temperature de-rated 1°C/300 m (1°F/547 ft) above 950 m (3117 ft)
Extended Operating Temperature	5°C to 40°C (41°F to 104°F) with no direct sunlight Maximum allowable operating temperature de-rated 1°C/175 m (1°F/319 ft) above 950 m (3117 ft) 5°C to 45°C (41°F to 113°F) with no direct sunlight Maximum allowable operating temperature de-rated 1°C/125 m (1°F/228 ft) above 950 m (3117 ft) System performance may be impacted when operating in the extended operating temperature range. Operation above 40C is limited to less than 1% of annual operating hours. Hardware configuration limits apply to extended operating temperature range.
Non-Operating Temperature	-40°C to 65°C (-40°F to 149°F) Maximum rate of change (operating and non-operating) 20°C/hr (36°F/hr)
Operating Relative Humidity	8% to 90% and 24°C (75°F) maximum dew-point temperature, non-condensing environment
Non-Operating Relative Humidity	5% to 95% and 33°C (91°F) maximum dew-point temperature, non-condensing environment
Operating Altitude	0 m to 3050 m {10,000 ft)
Sound Power level, Measure A-weighted per ISO7779 LWAd (Bels) Operation at 73°F (23°C)	5.8
Sound Pressure level, Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C)	43

## Extended Operating Temperature Hardware Configuration Limits

Table 29 Cisco HXAF220c M5 Extended Operating Temperature Hardware Configuration Limits

Platform <sup>1</sup>	ASHRAE A3 (5°C to 40°C) <sup>2</sup>	ASHRAE A4 (5°C to 45°C) <sup>3</sup>
Processors:	155W+	155W+ and 105W+ (4 or 6 Cores)
Memory:	LRDIMMs	LRDIMMs
Storage:	M.2 SATA SSDs NVMe SSDs	M.2 SATA SSDs NVMe SSDs
Peripherals:	PCIe NVMe SSDs GPUs	MRAID PCIe NVMe SSDs GPUs mLOMs VICs NICs HBAs

Notes:

1. Two PSUs are required and PSU failure is not supported
2. Non-Cisco UCS qualified peripherals and/or peripherals that consume more than 25W are not supported
3. High power or maximum power fan control policy must be applied

## Compliance Requirements

The regulatory compliance requirements for C-Series servers are listed in [Table 30](#).

Table 30 UCS C-Series Regulatory Compliance Requirements

Parameter	Description
Regulatory Compliance	Products should comply with CE Markings per directives 2014/30/EU and 2014/35/EU
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1 GB4943 2001
EMC - Emissions	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR32 Class A CISPR32 Class A EN55032 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN32 Class A CNS13438 Class A
EMC - Immunity	EN55024 CISPR24 EN300386 KN35



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